

# *Virginia Conservation Lands Needs Assessment*

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**I**ncreasing human population has been a driving force in the rapid development of Virginia in recent decades. Of all the development that has occurred in the last 400 years, more than a quarter of it has taken place in the last 15 years. If Virginia continues to grow as it has, more land will be developed in the next 40 years than has been since the Jamestown settlement was established in 1607. The population of Virginia is predicted to increase 5% by the year 2010, by almost 15% by the year 2020, and by nearly 24% by the year 2030. The pressures of development will increase as the population continues to increase, thus land conservation must become a prominent consideration in all land planning efforts at the local, regional, and commonwealth levels if we are to effectively conserve lands for future generations. These lands provide benefits in terms of open space, recreation, cultural and historic resource protection, natural resource protection, water quality improvement and maintenance, and carbon sequestration, along with the economic benefits associated with these functions. The Virginia Conservation Lands Needs Assessment (VCLNA) can help guide effective conservation by providing tools that help both government and private organizations identify resource protection areas and that, at the local level, help planners manage growth in a balanced way.

**B**alanced land use and land conservation were major themes in Governor Timothy Kaine's speech at the 2006 Environment Virginia Conference. Here are some quotes from that speech:

"As we partner to protect Virginia's outdoors, we must put balance at the center of land use decisions. We must create an effective model that encourages redevelopment in cities and suburbs and discourages the wasteful and unnecessary consumption of land farther out from our population centers. And we must reward communities that adopt and use balanced growth policies with economic development assistance and other incentives."

"Balanced land use is about foresight. It's about understanding the needs of today and weighing them against the needs of tomorrow. It's about solutions that meet both the short-term needs of business and the long-term needs of a community. It's about considering all the ramifications of growth, from the logistical burden it places on public resources to the quality-of-life burden it places on people in terms of energy usage, commute times and community quality. It's about rejecting the false choice of growth or no-growth and replacing it with growth that is sustainable."

"Since 1968, Virginia has preserved 330,000 acres of land. Most of that has been preserved in the past five years. The goal of my administration is for the state to preserve an additional 400,000 acres by the end of the decade. To accomplish that, we rely heavily upon the open-space protection tools that have served Virginia well: Our land preservation tax credit and the Virginia Land Conservation Foundation."

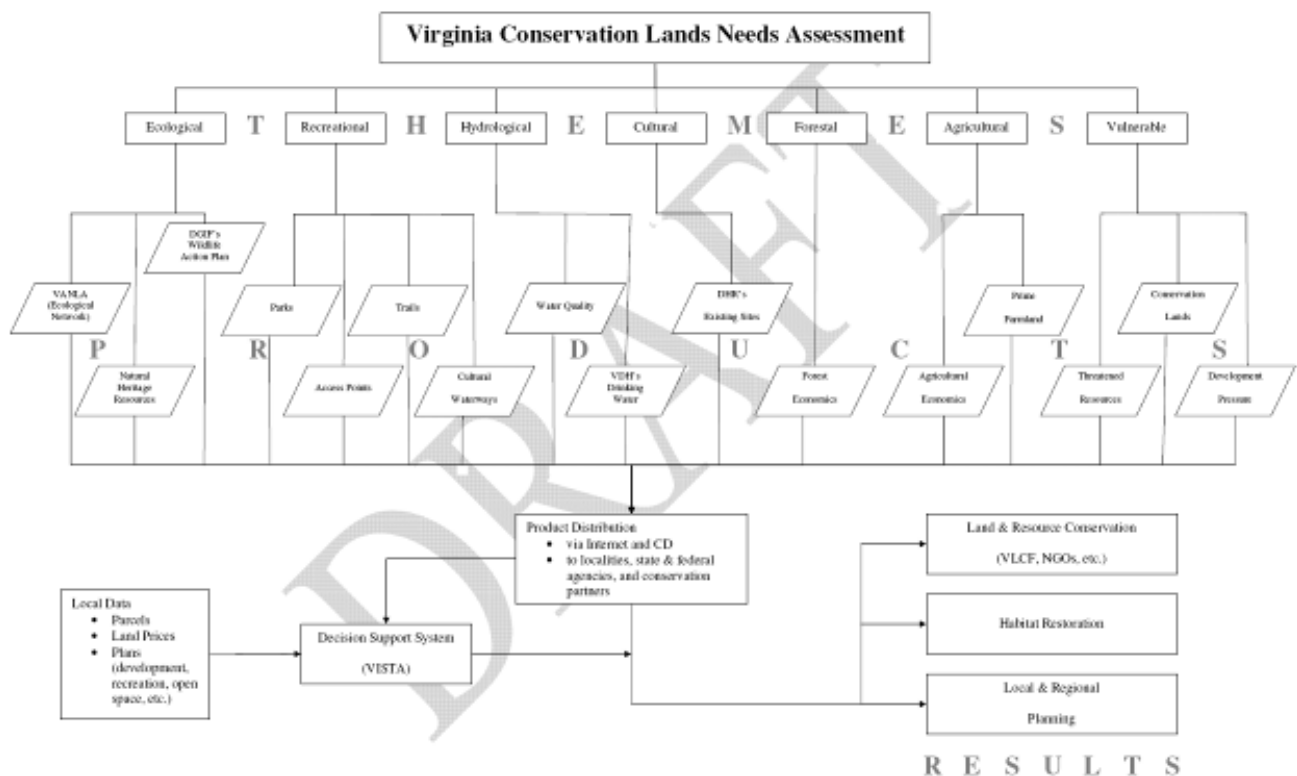
The VCLNA will be used by DCR to prioritize conservation targets for the Virginia Land Conservation Foundation.

**What is the Virginia Conservation Lands Needs Assessment (VCLNA)?**

The VCLNA is a flexible, widely applicable tool for integrating and coordinating the needs and strategies of different conservation interests, using GIS (Geographic Information System) to model and map land conservation priorities and actions in Virginia. The VCLNA allows the manipulation of issue-specific data sets that can be weighted and overlaid to reflect the needs and concerns of a variety of conservation partners - issues like:

- unfragmented natural habitats
- natural heritage resources
- outdoor recreation
- prime agricultural lands
- cultural and historic resources
- sustainable forestry
- water quality improvement
- drinking water protection

**Overview of the Virginia Conservation Lands Needs Assessment**



## Green Infrastructure / VCLNA GIS Models

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In an effort to make the VCLNA a comprehensive green infrastructure planning tool additional geospatial datasets are being created for the varied needs of additional conservation partners. The Chesapeake Bay Program has identified some available datasets and created useful models as part of their Resource Lands Assessment. DCR has built on the [GIS models](#) used for the [Chesapeake Bay Program's Resource Lands Assessment](#), modifying methodology, adjusting weights, and adding data to tailor them specifically for Virginia interests. The Virginia Coastal Program and the Virginia Land Conservation Foundation are funding the VCLNA. Depending on needs identified, other datasets might include or address:

- Spatially explicit sites identified as priorities through existing plans (such as Partners in Flight priority sites).
- Local parks, local natural features (useful for Green Infrastructure identification)
- Wildlife diversity (for State Wildlife Comprehensive Planning)
- Recreational lands and identified recreation needs (for Virginia Outdoors Plan)
- Forest use and forest economic data (for Sustainable Forestry decision-making)
- Surface and subterranean drinking water sources (for drinking water protection)
- Biotic and abiotic factors that influence stream water quality (for water quality protection and improvement)
- Historic and cultural resource locations (for historic resource protection)
- Prime agricultural lands (for Agricultural Reserves)
- Growth measures (for vulnerability analyses)

DCR-DNH has made strides in recent years in the development of the main ecological component of the VCLNA with the completion of the Coastal Zone Natural Landscape Assessment (VANLA). Although the VANLA provides a good starting point identifying “green infrastructure”, there are additional components to consider for a more comprehensive Green Infrastructure GIS model in Virginia. DCR-DNH is expanding the [VCLNA](#) to include data for cultural and historic resources, population growth / vulnerability, sustainable forestry / forest economics, prime agricultural soils, outdoor recreation, drinking water protection and water quality.

### [Green Infrastructure](#)

[Ecological Model \(VANLA\)](#)    [Cultural Model](#)    [Vulnerability Model](#)

[Forest Economic Model](#)    [Agricultural Model](#)    [Recreation Model](#)

[Water Quality Model](#)

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This project was funded in part by the Virginia Coastal Program at the Department of Environmental Quality through Grant #NA17OZ1142-001 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, under the Coastal Zone Management Act of 1972, as amended.

There should be additional grant numbers. We should also add VLCF funding and all the logos (VLCF, VOF, CBP, etc.)



## Green Infrastructure

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The VCLNA models are being developed as part of a collaborative effort between the Department of Conservation and Recreation Division of Natural Heritage (DCR – DNH), the Virginia Coastal Zone Management Program (VA-CZM), the Virginia Land Conservation Foundation, and the Virginia Commonwealth University Center for Environmental Studies to map Green Infrastructure in Virginia.

Green infrastructure has been defined as “an interconnected network of waterways, wetlands, woodlands, wildlife habitats, and other natural areas; greenways, parks and other conservation lands; working farms, ranches and forests; and wilderness and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources and contribute to the health and quality of life for America’s communities and people” (<http://www.asu.edu/caed/proceedings00/EUGSTER/eugster.htm>).

Green infrastructure planning involves the coordination of “conservation values and actions in concert with land development and growth management” ([Benedict, M., Allen, W., and E. McMahon. 2004. \*Advancing Strategic Conservation in the Commonwealth of Virginia\*.](#)

For additional discussions on Green Infrastructure, refer to the following links:

<http://www.greeninfrastructure.net/?article=1001>

<http://www.greeninfrastructure.net/?article=2019>

<http://www.geoplan.ufl.edu/epa/>

<http://www.conservationfund.org/?article=2153>

<http://www.dnr.state.md.us/greenways/gi/gi.html>

## Green Infrastructure Advisory Workgroup

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The Green Infrastructure Advisory Workgroup (GIAW) was developed to guide the development of a comprehensive green infrastructure for Virginia. Specifically, the workgroup aims to identify:

- Issues related to Green Infrastructure that the workgroup feels should be addressed.
- Datasets, existing or in need of development, pertinent to Green Infrastructure and coastal resource management.
- Product deliverables, including data and analytical tools needed to assist user’s in managing coastal resources.

The GIAW met in Richmond, VA on April 5, 2006. [Representatives were invited](#) from various agencies, universities and organizations. Presentations were made at the beginning of the session to introduce the project. Laura McKay from the DEQ’s Coastal Program presented on Coastal GEMS, Virginia Commonwealth University Center for Environmental Studies Greg Garman presented on VCU’s INSTAR project and Tom Smith, Joseph Weber and Jennifer Ciminelli presented an overview of the VCLNA.

Click below for the presentations:

- Coastal GEMS
- INSTAR
- [VCLNA](#)

The workgroup consisted of [33 participants](#) who spent the day in sessions devoted to the above goals. A summary of the days findings were compiled by the facilitators of the group and can be reviewed [here](#). The Findings Report will be reviewed by the VCLNA project team and assessed to see what datasets and needs identified from the GIAW can be incorporated into the VCLNA.

The GIAW will meet again on **June 6, 2006** in Richmond, VA to discuss the report findings and the application to the VCLNA project as well as other Green Infrastructure project happening around the state. While the GIAW serves as an Advisory group, it also serves to support collaboration of green infrastructure planning among various Virginia agencies, universities, and organizations.

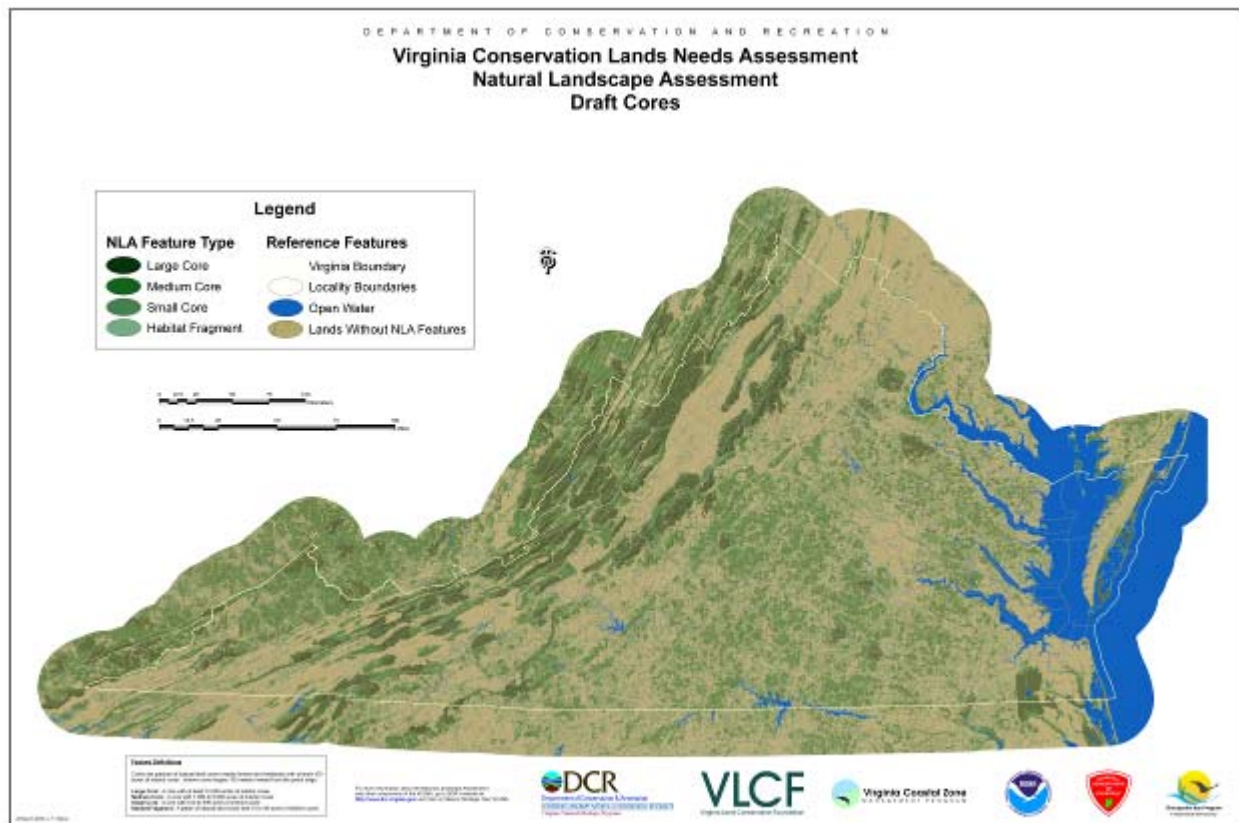
For additional information on the GIAW, please contact [Jennifer Ciminelli](#) (804.786.3375).

## Virginia Natural Landscape Assessment

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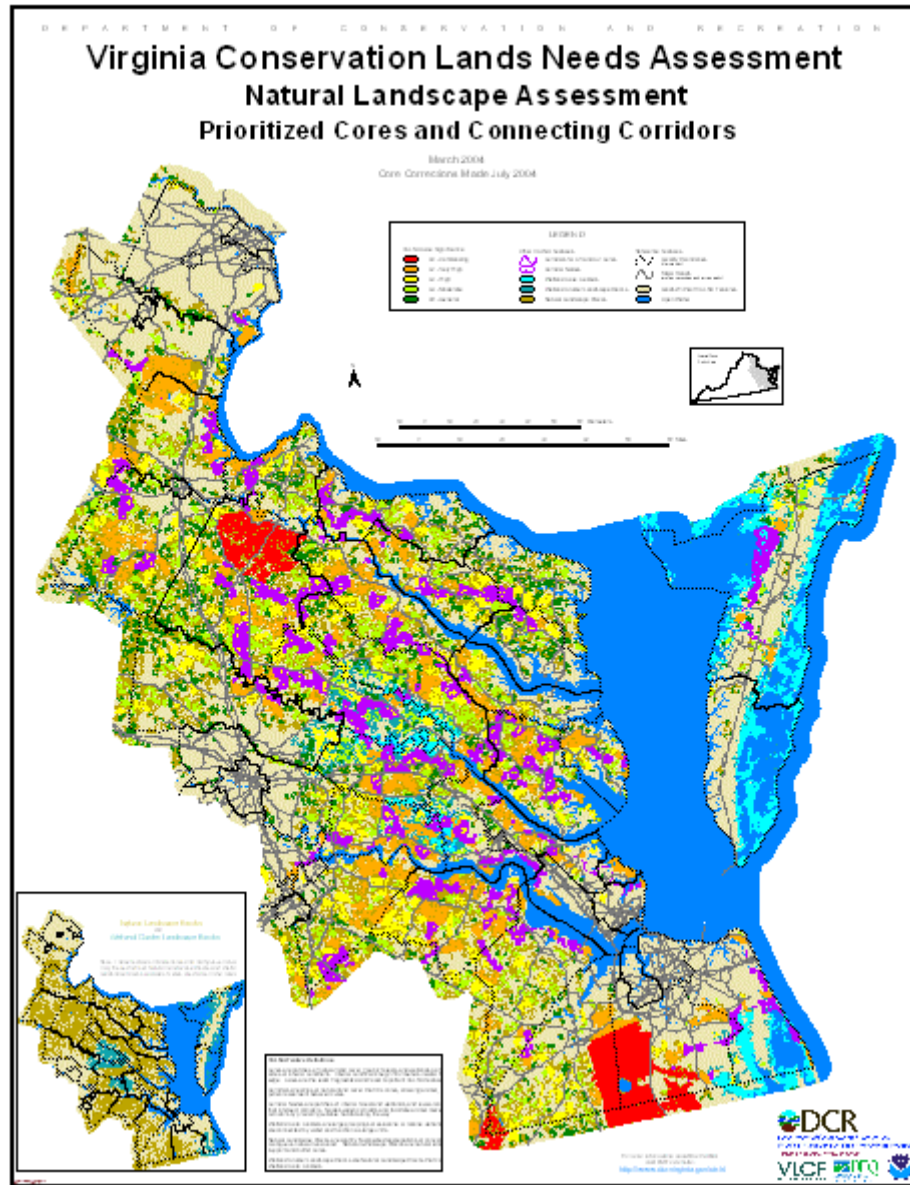
The Virginia Natural Landscape Assessment (VANLA), the main ecological component of the VCLNA, is a landscape-scale GIS analysis for identifying, prioritizing, and linking natural habitats in Virginia. Using land cover data derived from satellite imagery, the NLA identifies large, unfragmented natural habitats called cores, which are large patches of natural land cover with at least 100 acres of interior conditions. For the purpose of this analysis, natural land covers are mainly forests and forested wetlands, but also included are large marshes, beaches, and dunes in the coastal plain. Large, medium, and small cores have been identified for the entire Commonwealth (see Figure 1, below), as well as a smaller feature type called "habitat fragments" that may be important in the more urban localities. Cores provide habitat for a wide range of species, from interior-dependent forest species to habitat generalist, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection), and carbon sequestration, along with the associated economic benefits of these functions. The cores will be ranked using many prioritization themes, such as the number of natural heritage elements (i.e. rare species) occurring in a core (see Figure 2, below), and then the highest-ranked cores will be connected by corridors of natural land cover to create a core and corridor network for the Commonwealth. VCLNA products will be used by VLCF, state and federal agencies, and other conservation partners for land and resource conservation and habitat restoration. The data also will be distributed to localities to be used in local and regional planning

efforts.









**Click around on the above image to zoom into greater detail.**

The primary focus of the VCLNA Natural Landscape Assessment for the Coastal Zone is ecological prioritization - which are the most important natural, unfragmented lands ("Cores") based on considerations of biological and ecological value and integrity? [Click here for more information about the significance of habitat fragmentation.](#) Natural Landscape Blocks have also been identified - natural lands with relatively little human disturbance that surround, buffer, and support the Cores. Corridors connecting the highest priority Cores were developed by identifying the shortest distances through the most suitable habitats. DCR has also used data on development pressures (from CBP's Resource Lands Assessment) to identify which cores are most at risk of loss or degradation.

Based on the lessons learned during the pilot analysis and comments received from localities and other end users, we are refining the statewide VANLA methodology, including

the addition of the habitat fragment feature type that is important in the more developed localities that have few or no cores. Another improvement is in the use of statewide land cover data that were all processed by the same research group.

## Coastal Zone NLA Atlas

**A**tlasses were produced for the pilot analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts. The contents of these Atlases are available [online](#) and on [CD by request](#) and include:

- Maps showing:
  - prioritized cores and corridors
  - protected lands that intersect cores
  - the most vulnerable cores
  - Natural heritage conservation sites and cores that intersect them
- A catalog of cores identifying the specific values that determine their priority
- Data CD containing GIS models and all coastal zone NLA data

## VANLA Atlas

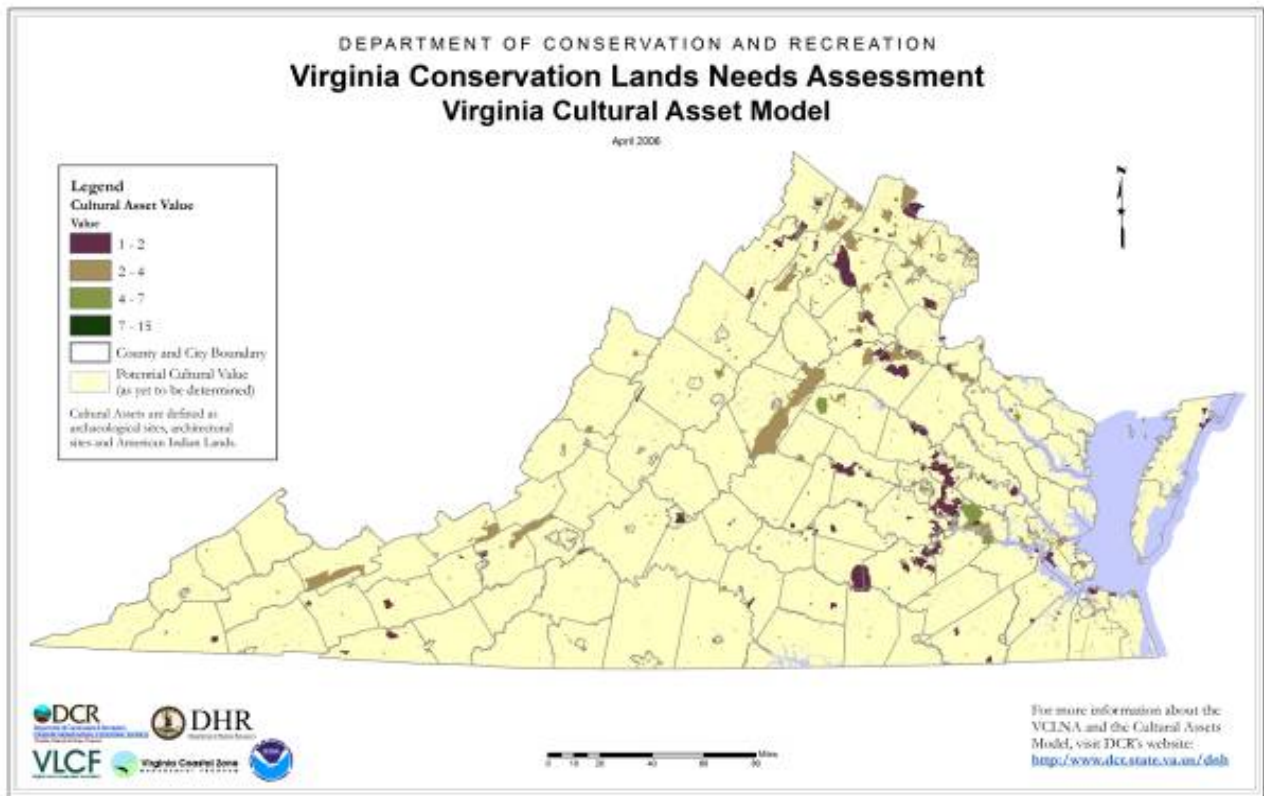
**A** comprehensive atlas, probably in multiply volumes, will be produced with maps for all the Planning Districts in the Commonwealth. The contents of these atlases will be similar to those resulting from the CZNLA. Additional maps will be available online and on CD by request.

## Application of the VANLA

**S**ome general categories of uses to which the NLA data can be applied include:

- Targeting – to identify targets for protection activities such as conservation land purchase or easements.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts to cores and other NLA features.
- Land management – to guide property owners and public and private land managers in making land management decisions that enhance ecological values.
- Public education – to inform the citizenry about the patterns and extent of habitat fragmentation.

## Cultural Model



The objective of the Cultural Model is to map the relative cultural value of lands in Virginia. DCR – DNH collaborated with the Virginia Department of Historic Resources (<http://www.dhr.virginia.gov/>) in the development of this model in an effort to help promote the mission of DHR “to foster, encourage, and support the stewardship of Virginia's significant historic, architectural, archaeological, and cultural resources”. DHR was used as the expert source for model parameter weighting and as the data sources.

The cultural data model includes the following datasets with the associated attributes that controlled the ranking of:

- Archaeological and Architecture sites
  - Entity has been listed as a National Historic Landmark
  - Entity listed in the Virginia Landmarks Registry
  - Entity has been listed in the National Register of Historic Places
  - Historic preservation easement
  - Sites that are eligible to be on the national register
  - Sites for which a national register eligibility determination has not been made
  - Sites that are not eligible to be on the national register
- American Indian Lands

## Application of the Cultural Model

Some general categories of uses to which the cultural model data can be applied include:

- Targeting – to identify targets for protection activities.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts to archaeological sites, architectural sites or American Indian Lands.
- Land management – to guide property owners and public and private land managers in making land management decisions that enhance cultural values.
- Public education – to inform the citizenry about the cultural value of their community, helping retain the unique sense of place associated with these communities.

## Cultural Resources Atlas

**A**tlasses will be produced for this analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts as well as statewide maps and statewide Planning Districts. The contents of these Atlases will be available [online](#) and on [CD by request](#) and include:

- Maps showing:
  - Cultural value of land.
  - Cultural lands at risk to development.
  - Natural heritage conservation sites and cores that intersect cultural lands.
- A breakdown of the specific values that determine the priority.
- Data CD containing GIS 30 meter cell grid based models (the archaeological site data are sensitive datasets licensed by the Department of Historic Resources. For specific archaeological or architectural datasets, please contact the Department of Historic Resources [http://www.dhr.virginia.gov/homepage\\_features/map\\_to\\_richmond.htm](http://www.dhr.virginia.gov/homepage_features/map_to_richmond.htm)).
- Associated metadata and methodology.



## Vulnerability Model

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The objective of the vulnerability model is to map the relative value of threat of an area to be converted from its current use to urban use. The Vulnerability model is based closely on the RLA methodology (see [http://www.chesapeakebay.net/rla\\_vulnerability.htm](http://www.chesapeakebay.net/rla_vulnerability.htm)).

Vulnerability is defined as “a function of both suitability for development and proximity to growth hot spots” (Claggett, P and C. Bisland. 2004. Assessing the vulnerability of forests and farmlands to development in the Chesapeake Bay Watershed. *Proceedings of the IASTED International Conference ENVIRONMENTAL MODELLING AND SIMULATION*).

The vulnerability model was developed using several data layers upon which analyses were run and resulting datasets generated. Data layers included:

- RESAC 2000 land cover
- 1990 and 2000 Impervious surface data
- 1990 census block group data
- 2000 census block group data
- Road density
- Parcel lot size
- Land consumption rates
- Growth hot spots
- Impervious surface hot spots
- Residential land conversion hot spots
- Travel time
- Threat

## Application of the Vulnerability Model

Some general categories of uses to which the vulnerability model data can be applied include:

- Targeting – to identify areas considered hot spots for development and to identify trends in development.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts.
- Land management – to guide property owners and public and private land managers in making land management decisions to control the effect of sprawl.
- Public education – to inform the citizenry about the patterns of growth and the potential impacts on the environment and resources from this growth.

## Vulnerability Atlas

Atlases will be produced for this analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts as well as statewide maps and statewide Planning Districts. The contents of these Atlases will be available [online](#) and on [CD by request](#) and include:

- Maps showing:

- Vulnerability threat.
  - Vulnerability model in relation to forest economic model, recreational model, water quality model, cultural model, agricultural model and ecological model.
  - Vulnerable Natural heritage conservation sites and cores.
- Data CD containing GIS 30 meter cell grid based models as well as derived datasets upon request.
- Associated metadata and methodology.

## Forest Economics Model

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The objective of the forest economics model is to identify economically important forests in Virginia. DCR – DNH is collaborating with the [Virginia Department of Forestry](http://www.dof.virginia.gov/stforest/index.shtml) in the development and implementation of the model. The assessment of forest economic value is important for timberland management as well as forest conservation. Forestry management is important to

- “manage the forest land for a steady supply of timber
  - to ensure the operation and maintenance of the resource
  - to help maintain a stable local economy
- provide recreation opportunities
- maintain aesthetics for Virginians
- maintain wildlife habitats
- create natural reserves
- preserve water quality”

(<http://www.dof.virginia.gov/stforest/index.shtml>)

The forest economics model uses a variety of datasets and subsequent derived datasets from analyses run in GIS. Datasets include:

- Species composition (vegetation community type)
- Soil productivity
- Forest density
- Wetland and riparian features
- Slope
- Threatened and Endangered species / Natural heritage conservation sites
- 2000 census block data
- Parcel lot size
- Historic timber harvest
- Mill locations
- Economic data

## Application of the Forest Economic Model

Some general categories of uses to which the forest economic model data can be applied include:

- Targeting – to identify management areas as related to above stated goals.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts.
- Land management – to guide property owners and public and private land managers in making land management decisions as related to timberland and forest management activities / plans.
- Public education – to inform the citizenry about the importance of Virginia’s forests.



## Forest Economics Atlas

**A**tlases will be produced for this analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts as well as statewide maps and statewide Planning Districts. The contents of these Atlases will be available [online](#) and on [CD by request](#) and include:

- Maps showing:
  - Forest economic value of land in Virginia.
  - Forest economic model in relation to vulnerability model, recreational model, water quality model, cultural model, agricultural model and ecological model.
  - Natural heritage conservation sites and cores that intersect forests of high economic value.
- Data CD containing GIS 30 meter cell grid based models as well as derived datasets upon request.
- Associated metadata and methodology.

## Agricultural Model

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The objective of the agricultural model is to identify areas considered to be prime farmland in Virginia. The model will determine areas of importance for agricultural productivity.

The agricultural model uses a variety of datasets and subsequent derived datasets from analyses run in GIS. Datasets include:

- STATSGO and SSURGO soils data (including prime, unique or locally important farmland)
- Land use
- Drainage
- Erosion
- Slope
- RESAC 2000 land cover
- Agricultural economics
- Market locations

## Application of the Agricultural Model

Some general categories of uses to which the agricultural model data can be applied include:

- Targeting – to identify areas of high agricultural value.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts.
- Land management – to guide property owners and public and private land managers in making land management decisions, particularly highlighting the relationship between sprawl and conversion of agricultural land to subdivisions.
- Public education – to inform the citizenry about the importance of Virginia's farmland.

## Agriculture Atlas

Atlases will be produced for this analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts as well as statewide maps and statewide Planning Districts. The contents of these Atlases will be available [online](#) and on [CD by request](#) and include:

- Maps showing:
  - Agricultural value of farmland in Virginia.
  - Agricultural model in relation to vulnerability model, recreational model, water quality model, cultural model, forest economic model and ecological model.
  - Natural heritage conservation sites and cores that intersect prime farmland.
- Data CD containing GIS 30 meter cell grid based models as well as derived datasets upon request.
- Associated metadata and methodology.

## Recreation Model

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The objective of the recreation model is to show existing recreation areas and to identify other areas that have recreational value in Virginia. This model is specific to Virginia and is not building off any CBP RLA model.

The recreation model uses a variety of datasets and subsequent derived datasets from analyses run in GIS. Datasets include:

- Federal, State and Local Parks
- Access points
- Trails:
  - Blueways
  - Greenways
  - Birding and Wildlife Trails
- Hunting and fishing value (DGIF)
- Potential Trails

## Application of the Recreation Model

Some general categories of uses to which the recreation model data can be applied include:

- Targeting – to identify areas of high recreational value.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts.
- Land management – to guide property owners and public and private land managers in making land management decisions, particularly highlighting the relationship between land value and open space / recreation areas.
- Public education – to inform the citizenry about the importance of Virginia's recreational lands.

## Recreation Atlas

Atlases will be produced for this analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts as well as statewide maps and statewide Planning Districts. The contents of these Atlases will be available [online](#) and on [CD by request](#) and include:

- Maps showing:
  - Recreational value of land in Virginia.
  - Recreation model in relation to vulnerability model, agriculture model, water quality model, cultural model, forest economic model and ecological model.
  - Natural heritage conservation sites and cores that intersect lands with high recreation value.
- Data CD containing GIS 30 meter cell grid based models as well as derived datasets upon request.
- Associated metadata and methodology.

## Water Quality Model

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The objective of the water quality model is to predict the relative value of lands for protecting water quality and watershed integrity (Chesapeake Bay RLA). This model will be done in conjunction with the [Department of Conservation Division of Soil and Water Conservation Program](#). The Division of Soil and Water work on a variety of GIS models that incorporate values important to water quality and watershed function.

The water quality model uses a variety of datasets and subsequent derived datasets from analyses run in GIS. Datasets include:

- Erodible soils
- Net Primary Productivity
- Slope
- Wetland Function
- Forest Fragmentation
- Stream Density
- Land Use
- Concentrated animal feeding operations
- Impervious surfaces
- Drinking water sites and wellhead areas

## Application of the Water Quality Model

Some general categories of uses to which the water quality model data can be applied include:

- Targeting – to identify areas important for maintaining or improving water quality.
- Prioritizing – to provide primary or additional justification for key conservation land purchases and other protection activities.
- Local planning – guidance for comprehensive planning and local ordinance and zoning development.
- Assessment – to review proposed projects for potential impacts.
- Land management – to guide property owners and public and private land managers in making land management decisions.
- Public education – to inform the citizenry about the importance of land use and the effect on water quality and watershed integrity.

## Water Quality Atlas

Atlases will be produced for this analysis - one comprehensive Atlas for the entire Coastal Zone and 8 regional Atlases for each of the coastal Planning Districts as well as statewide maps and statewide Planning Districts. The contents of these Atlases will be available [online](#) and on [CD by request](#) and include:

- Maps showing:
  - The relative value of land in Virginia for maintaining watershed integrity and for protecting water quality.
  - Water quality model in relation to vulnerability model, agriculture model, recreation model, cultural model, forest economic model and ecological model.
  - Natural heritage conservation sites and cores that intersect lands important to water quality.

- Data CD containing GIS 30 meter cell grid based models as well as derived datasets upon request.
- Associated metadata and methodology.

## How can the VCLNA be used?

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The VCLNA can be utilized as a decision support tool for local and regional agencies and organizations in their efforts to employ [green infrastructure principles](#) during their planning processes.

We encourage people to review these products, to try to use them to accomplish conservation goals, and to consider ways in which they could be improved to accomplish current projects more effectively or to enable their use in future projects.

We encourage local and regional agencies and organizations to implement conservation actions using these data and analyses. As a robust, well-documented GIS model, the Virginia Conservation Lands Needs Assessment can be creatively tweaked to offer practical uses for a variety of needs. The ability to add data makes it an excellent framework for future development of protection and growth planning tools.

There are no legal or regulatory requirements associated with Virginia Conservation Lands Needs Assessment, nor should the VCLNA serve as sole justification for any activities. The VCLNA is a rather coarse-scale analysis that, though informative, needs to be considered in conjunction with any number of other factors in guiding conservation actions or any other activities. DCR is continuing to work on the VCLNA to identify some of these additional decision-guiding factors, but economic, local, and even personal considerations will always be important in decision-making.

The data will be available in GIS format for in-house use, as well as available in hard copy maps for reference. Maps produced from the VCLNA can provide an organizational medium for planners to inform and engage the public at a variety of scales. Be sure to understand what data are and are not presented on each map. Ultimately, we envision serving the VCLNA up on an interactive web site, where individuals will be able to influence the weighting parameters of the model to draw their own conclusions for their plan.